

Sundays, bears principally on the use of the lathe for modelling. M. Hervé Mangon, having established a Siemens electromagnetic machine for lighting purposes at the Conservatoire, sends by request supplies to the several laboratories of the establishment. Up to the present moment it has been used only by photographers.

At the adjourned ordinary meeting of the Sanitary Institute, to be held at 9, Conduit Street, on Wednesday, May 18, at 8 p.m., the discussion will be continued upon the address delivered by Dr. Richardson, F.R.S., Chairman of Council—"Suggestions for the Management of Cases of Small Pox, and of other Infectious Diseases in the Metropolis and Large Towns."

At the meeting of the Iron and Steel Institute last week the papers were almost entirely of a purely technical or commercial character.

MR. CHARLES E. TURNER, Lector at the University of St. Petersburg, will begin a course of five lectures at the Royal Institution, on the Great Modern Writers of Russia—Pouschkin, Lermontoff, Gogol, Tourgenieff and Nekrasoff—on Saturday, the 21st.

AN International Medical Congress meets at Madrid on the 20th inst.

THE extinction of the Brush electric light in the City last week is stated to have been caused by the defective insulation of the wires.

ALL the large railway companies in the country have intimated their intention of sending engines to the typical engine exhibition to be held at Newcastle on the occasion of the Stephenson centenary.

THE annual meeting of the U.S. Society for the Promotion of Agricultural Science will be held at Cincinnati on Tuesday, August 16, the day preceding the session of the American Association for the Advancement of Science.

THE fifth and concluding course of Cantor Lectures for the present session at the Society of Arts will be by Mr. R. Brudenell Carter, on the subject of "Colour Blindness, and its Influence on Various Industries." The course consists of three lectures, the first of which will be delivered upon Monday next, the 16th inst. This lecture will deal generally with the subject. The second lecture will treat of methods of testing for colour blindness, the prevalence of the affection, mistakes of the colour blind, and methods of endeavouring to counteract the defect. The subject of the third lecture is specially the industries chiefly affected by colour blindness. In it an account will be given of recent legislation on the subject in America, and the necessity for it in this country.

MASSON of Paris has issued a third series of Prof. Paul Bert's "Revue scientifique," published in the *République Française*.

THE Annual Report of the Belfast Naturalists' Field Club for 1879-80 tells of its continued prosperity, and contains an account of the various excursions made during last summer. Appended are "A List of the Post-Tertiary Foraminifera of the North-East of Ireland," by Joseph Wright, F.G.S., and "A List of the Mollusca of the Boulder Clay of the North-East of Ireland," by S. A. Stewart.

THE Birmingham Natural History Society has issued a *Report and Transactions* for 1880, which in quantity and quality does its members great credit. There is an interesting address by the president, Mr. W. Southall, and a number of natural history papers, some by outsiders, and one or two on subjects connected with local natural history. The Society is now housed in the Mason College.

IN compliance with the provisions of a recent decree, the system of Algerian telegraphy has been *rattaché* to the French

administration, and is governed from Paris. The head of the Algerian service has been appointed director at Lyons.

THE annual *conversazione* given by the President and Council of the Royal Society was held on Wednesday last week. It was well attended, and there were numerous scientific and artistic novelties on view.

MR. E. IM THURM is writing on Aspects of Plant Life in British Guiana, in the *Gardeners' Chronicle*.

THE additions to the Zoological Society's Gardens during the past week include a Black-faced Spider Monkey (*Ateles ater*) from Eastern Peru, a Collared Peccary (*Dicotyles tajaçu*) from South America, presented by Mr. E. H. Dance; a Roseate Cockatoo (*Cacatua roseicapilla*) from Australia, presented by Sir Charles C. Smith, Bart.; a Swift (*Cypselus apus*), European, presented by Mr. H. H. Johnston; a Common Viper (*Vipera berus*), British, presented by Mr. John Poyer Poyer.

OUR ASTRONOMICAL COLUMN

THE COMET OF 1812.—Under certain suppositions as regards the epoch of perihelion passage of this comet, the return of which may now be expected, it will be necessary to search for it on a particular date, upon the assumption that it has yet a considerable orbital angle to describe before arriving in perihelion, because the geocentric position corresponding to a small orbital angle will place the comet too near to the sun's position to allow of observations. If we employ the elliptical elements deduced by Mr. W. E. Plummer from a new reduction and discussion of several of the most reliable series of observations in 1812, we find the following values of the comet's heliocentric equatorial co-ordinates and of the radius vector for intervals of 100 days to 60 days before perihelion passage; the co-ordinates are referred to the equinox of 1881'0.

| Time from perihelion. | x . | y . | z . | Log. radius-vector. |
|-----------------------|-------------|-------------|-------------|---------------------|
| - 100 days ... | +0°5619 ... | -0°5939 ... | +1°6649 ... | 0°2683 |
| - 90 " ... | +0°5478 ... | -0°4432 ... | +1°5725 ... | 0°2363 |
| - 80 " ... | +0°5305 ... | -0°2904 ... | +1°4712 ... | 0°2016 |
| - 70 " ... | +0°5093 ... | -0°1357 ... | +1°3592 ... | 0°1637 |
| - 60 " ... | +0°4832 ... | +0°0209 ... | +1°2337 ... | 0°1222 |

Combining these co-ordinates with the X, Y, Z of the *Nautical Almanac* for May 27'5 and June 26'5, days of new moon in the present year, we get the following results:—

For May 27'5

| t . | R.A. | Decl. | Distance from earth. | Intensity of light. |
|----------------|----------|-----------|----------------------|---------------------|
| - 100 days ... | 15°2 ... | +63°9 ... | 2'267 ... | 0°057 |
| - 90 " ... | 23°5 ... | 62°0 ... | 2'201 ... | 0°070 |
| - 80 " ... | 31°2 ... | 59°4 ... | 2'140 ... | 0°086 |
| - 70 " ... | 38°3 ... | 56°2 ... | 2'083 ... | 0°108 |
| - 60 " ... | 44°8 ... | +52°2 ... | 2'030 ... | 0°139 |

For June 26'5

| t . | R.A. | Decl. | Distance from earth. | Intensity of light. |
|----------------|----------|-----------|----------------------|---------------------|
| - 100 days ... | 35°7 ... | +74°5 ... | 2'146 ... | 0°063 |
| - 90 " ... | 47°1 ... | 71°4 ... | 2'084 ... | 0°078 |
| - 80 " ... | 55°8 ... | 67°6 ... | 2'027 ... | 0°096 |
| - 70 " ... | 62°5 ... | 63°1 ... | 1'976 ... | 0°120 |
| - 60 " ... | 67°8 ... | +57°9 ... | 1'931 ... | 0°153 |

These places will define the region of the sky where the comet should be sought, and telescopes of good optical capacity will be needed. When Pons discovered the comet on July 20, 1812, the theoretical intensity of light was 0°18.

The mean motion in 1812 not being ascertainable within very narrow limits, no attempt, so far as we know, has been made to determine the effect of perturbation in the present revolution, and we have therefore to be content with the method of careful sweeping over the region of the sky, on which the orbit may be projected at any time. Sir George Airy's orbit-sweeper, it is true, would limit the extent of sky-ground to be examined, but we suspect the only instrument of sufficient power yet mounted upon his principle is that at the Imperial Observatory at Strassburg, where it is not to be doubted that it will be put in active operation by Prof. Winnecke. We may remind the reader that

sweeping ephemerides for the whole year were published from Strassburg some time since, and will be found in the *Vierteljahrsschrift der Astronomischen Gesellschaft*, Jahrgang 12. Those given above apply to greater distance from perihelion.

THE TRANSIT OF VENUS, 1882.—At the sitting of the Paris Academy of Sciences, on the 2nd inst., the Minister of Foreign Affairs transmitted a letter from the British Ambassador, on the part of his Government, desiring to be informed with which French authorities the Royal Society of London should communicate, with the view to an interchange of opinions relative to the observation of the approaching transit of Venus. The letter was referred to a commission already nominated.

COMET 1880, V. (PECHÛLE, DECEMBER 16).—This comet was followed by M. Bigourdan until March 31, efforts having been made at the Observatory of Paris to observe it as long as possible on account of the resemblance of the orbit to that of the great comet of 1807. M. Bigourdan's last elements gave the place with errors of only 25.0 in right ascension, and 20" in declination: they will be found in *Comptes rendus*, vol. xcii. p. 172.

COMET 1881, α (SWIFT, MAY 1).—We have received from the Imperial Observatory of Strassburg the following observation of the new comet, made by Dr. Hartwig with the "orbit-sweeper":—

May 5, at 14h. 56m. 9s. 8 mean time at Strassburg.
Right Ascension oh. 19m. 17s. 76; Declination +32° 19' 32".3.

CHEMICAL NOTES

IN the *American Chemical Journal* Prof. Mallet describes a simple form of calorimeter whereby the specific heats of moderately small quantities of solids or liquids may be measured with a fair degree of accuracy. Mercury is employed, instead of water, as the material whose temperature is raised, and comparison is made, not of the total amounts of heat given out by different bodies on cooling, but of fractions of this heat rendered as nearly as possible equal.

IN *Compt. rend.* Berthelot gives several thermal measurements showing that in the substitution of halogens for hydrogen in hydrocarbons, the quantity of heat evolved varies according to the series and chemical function of the hydrocarbons employed, and is generally smaller the greater the number of halogen atoms substituted. The heat of formation of chloral alcoholate in various physical states is also considered by Berthelot: among other results it is shown that chloral hydrate is decomposed by an excess of absolute alcohol, but that the alcoholate is decomposed by much water; in the former of these actions there is exhibited the decomposition of a more volatile compound—chloral hydrate—and formation of a less volatile—chloral alcoholate; and at the same time the expulsion of a less volatile substance—water—by a more volatile—alcohol.

THE proto-salts of chromium (or chromous salts) are unstable and but little known: in *Compt. rend.* M. Moissau describes two salts belonging to this series, viz., chromous chloride, CrCl_2 , and chromous sulphate, $\text{CrSO}_4 \cdot 7\text{H}_2\text{O}$.

IN the *Berichte* of the German Chemical Society Herr C. Zimmermann states that potassium permanganate may be used for determining iron in presence of considerable quantities of hydrochloric acid, if a solution of manganous chloride, or preferably manganous sulphate, be added previous to titration.

ACCORDING to the hypothesis of Vant' Hoff, propyl glycol ought to be an optically active liquid, inasmuch as the molecule of this compound contains one *asymmetric* carbon atom, i.e. an atom directly united with four different radicles;—propyl

glycol being formulated as $\text{CH}_3-\text{C}-\text{CH}_2\text{OH}$ Le Bel

has recently shown (*Compt. rend.*) that if ordinary propyl glycol—from glyceric acid—be subjected to partial fermentation, the unfermented residue exhibits slight dextrorotatory powers. Le Bel thinks that ordinary propyl glycol contains both an optically active and an optically inactive modification, and that the latter being decomposed by the ferment, the presence of the former is rendered evident. From optically active propyl glycol Le Bel has prepared an active propylene oxide boiling at 33°, which he states is the most volatile optically active compound at present known.

A SERIES of optically active amylamines is described in *Compt. rend.* by M. Plimpton. These compounds are obtained from amyl bromide—from active amyl alcohol—by the action of alcoholic ammonia.

IN *Chem. Centralblatt* E. Ludwig describes experiments on the localisation of arsenic, absorbed as arsenious oxide, in the animal organism: contrary to the results of many former experimenters, Ludwig asserts that an accumulation of arsenic occurs in the liver: neither the bones nor the brain retain arsenic for any length of time. Arsenic was detected in the liver of a dog forty days after the last dose had been administered, but no trace could be found in the brain, bones, or muscles. Ludwig's results are generally confirmed by Johnson and Chittenden (*Amer. Chem. Journ.*).

MM. DES CLOIZEAUX AND DAMOUR describe (*Compt. rend.*) a new selenite of copper, to which they give the name *Chalcomenite*. The mineral occurs in the Argentine Republic, in small green clinorhombic crystals, associated with selenite of lead, and selenite of lead and copper.

M. SULLIOT proposes (*Compt. rend.*) to employ "chamber crystals" as a disinfectant. He places a solution of these crystals in sulphuric acid in the room or other place to be disinfected; the atmospheric moisture slowly decomposes the liquid with liberation of oxides of nitrogen, which destroy noxious organic matter present in the air.

MR. M. W. WILLIAMS describes, in *Chem. Soc. Journal*, a method for freeing water, to be analysed by the process of Frankland and Armstrong, from nitrates and ammonia. He digests the water with carefully-prepared "copper-zinc couple," whereby all nitrates are reduced to ammonia; he then distils off ammonia, evaporates to dryness, and proceeds in the usual manner. The use of sulphurous acid, which has always been much objected to, is thus obviated.

IN the same journal there is a suggestive paper by Prof. Hartley on the "Relation between the molecular structure of carbon compounds and their absorption-spectra." Evidence is accumulated in favour of the view that the selective absorption exhibited by "aromatic" compounds depends on the vibrations of the carbon atoms within the molecule, but that these atomic vibrations are dependent upon the nature of the molecular vibrations themselves, and are probably to be regarded as harmonics of these fundamental vibrations.

THE second and third parts of the *Gazzetta Chimica Italiana* for the present year exhibit very unmistakably the activity of Italian chemists, chiefly in the domain of organic chemistry. Schiff continues his researches on Glucosides; the derivatives of thymol are studied by Paternò and Canzoneri; Macagno describes experiments on the spectroscopic detection of artificial colouring matters in wines. Koenig, Schiaparelli, Barbaglia, and other known chemists contribute papers.

GEOGRAPHICAL NOTES

MR. EDWARD WHYMPER on Monday last addressed a large meeting of the Geographical Society on some features in his recent journey among the Great Andes of the Equator. His paper was not, however, of so popular a nature as those which he read before the Alpine Club and the Society of Arts. The chief facts left on the minds of his very attentive audience may be briefly stated. Mr. Whympfer found by careful experiments that aneroid barometers are not to be depended upon for the determination of heights, and that there is a remarkable difference in altitudes as fixed by the boiling point of water and the mercurial barometer. He asserted, as the result of his observations, that it is a mistake to suppose that there are two parallel chains in the Ecuadorian Andes, as usually shown on our maps. This is a point, however, on which more light is evidently required. Mr. Whympfer's account of his ascent of the hitherto unknown peak called Sara-Urcu, was very interesting, and this achievement alone would stamp him a mountaineer of the highest skill and courage.

THE following award has just been made of the medals given annually by the Council of the Geographical Society for competition among a limited number of public schools:—Physical Geography (Mr. H. N. Moseley, F.R.S., examiner): Gold medal, E. G. Reid, Dulwich College; silver medal, Sydney Edkins, City of London School; Political Geography (Right Rev. Bishop Abraham, examiner): Gold medal, Theodore